# Game Pitch Group 10

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## Team

|  |  |  |
| --- | --- | --- |
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## Theme

“1 minute to win it!”

The players will trigger short mini-games by racing. Points need to be collected within these mini-games to finally win the game.

## GitHub Project Page

<https://github.com/orgs/groep10/dashboard>

## Game Idea

We want to create a new type of game by combining several game types. Picture an arena battle, combined with die-hard racing to trigger mini-games that will contain parts of other game-genres.

In the arena 4 vehicles will race to reach a generated checkpoint. The later you reach the checkpoint, the bigger your handicap during the mini-game. When the last vehicle reaches the checkpoint a random mini-game starts. This can be either free-for-all, 2 vs. 2 or 1 vs. 3. The vehicle(s) that win(s) the mini-game get(s) a point. The switch between the race and the mini-game should be seamless. Both play out in the same 3D arena with the same player models. After 1 minute the mini-game must finish and there must be a winner or a winning team. Therefore the mini-games must be quick battles.

|  |  |  |
| --- | --- | --- |
| Free for all | 2 vs. 2 | 1 vs. 3 |
| Demolition  (take each other out) | **demolition** | **demolition** |
| Invasion  (kill as many invading creatures) | **invasion** | **Attack & defend**  (3 players defend an object while the other tries to destroy it) |
| “Tron” | **Capture the flag** | **Tag**  (the tagger wins if all players are tagged, otherwise the remaining players win) |
| Race to great heights  (platforms and ramps are introduced in the arena. Players must try to go a high as possible) |  |  |

The first vehicle to gain 3 points wins the game. When a mini-game is finished a new checkpoint will be generated after several seconds.

The arena is aware of its surroundings and constantly changing using procedural generation. The level also adapts to the mini-game to be played.

## Key Elements

In the tables below you find the key elements for each of the 4 subjects, Computer Graphics, Artificial Intelligence, Web & Database and Programming. Below the tables there will be a more detailed explanation for the elements that require it.

### Computer Graphics

|  |  |  |
| --- | --- | --- |
| Subject | Difficulty | Who is responsible? |
| Level Tour | \*\* | JanCees van Senden |
| High Scores | \* | Koen Ziere |
| Options | \* | Koen Ziere |
| Credits | \* | Koen Ziere |
| UI Animations | \* | Koen Ziere |
| Start-, Pause-, End-Screen | \* | Koen Ziere |
| Textures | \*\* | Rick Koster |
| 3D Models | \* | Rick Koster |
| 3D Animated Models | \*\* | Jasper Binda |
| Sounds | \* | Joseph Verburg |
| Total | **13** |  |

The **level tour** will be a movie through the arena before the game starts, the players can skip this if they like.

**Textures** will be generated in blender using cycles render.

**3D Animated Models** such as the vehicles, enemies, etc. will be created with blender and contain animations to for example turn the wheels when steering and simulate suspension.

### Artificial Intelligence

|  |  |  |
| --- | --- | --- |
| Subject | Stars | Who is responsible? |
| Path finding | \*\*\* | Jorien Knipping |
| Genetic algorithm to create fairness in the checkpoint generation | \*\*\*\* | JanCees van Senden |
| Level consciousness | \*\*\* | JanCees van Senden |
| Enemies | \*\* | Jasper Binda |
| Total | **12** |  |

**Path finding** to find the positions of players towards a certain point. This information is used as input for the **genetic algorithm** to find a location for the next checkpoint that is as fair as possible for all the players.

The **arena will be conscious of its surroundings** and change in response to that. For example where the players are located and which of the player should be favoured over other players because he won the check-point race. Getting this to work smoothly and look natural is not easy and therefore we rate it at 3 stars.

### Web & Database

|  |  |  |
| --- | --- | --- |
| Subject | Stars | Who is responsible? |
| Collect playthrough data | \*\* | Joseph Verburg |
| Store player data on webserver | \*\* | Joseph Verburg |
| Online accounts with avatars | \*\*\* | Joseph Verburg |
| Collect and show high scores from webserver | \*\* | Joseph Verburg |
| Total | **9** |  |

The game will be **multiplayer focused**, bots are a side-option in our plan. People can **create characters with avatars** and their **high scores will be collected** and **viewable in leader boards**.

### Programming

|  |  |  |
| --- | --- | --- |
| Subject | Stars | Who is responsible? |
| Procedurally generated level | \*\*\* | JanCees van Senden |
| Moving platforms | \* | JanCees van Senden |
| LAN Multiplayer | \*\*\*\* | Jasper Binda |
| Rear view option | \* | Jorien Knipping |
| Physics collisions | \* | Jorien Knipping |
| Vehicle movements/controlling | \*\* | Jorien Knipping |
| Mini-map | \*\* | Jorien Knipping |
| Total | **14** |  |

**The level will be procedurally generated.** The way it is composed changes all the time. For example ramps can appear and disappear, mountains can split the level in 2 and there can appear multiple planes at different heights to ride on. This includes **moving platforms**, for example the mountain rising from the ground or the planes moving around in 3D space.

As **the game is LAN multiplayer oriented** there will be some proper coding needed to create this feature. There is an overlap between *Web &Database* and *Programming* here. The basic idea is that one player will be the host of the game and others can join his session. Because of the overlap between the two subjects and the fact that this is hard to get running at real time we have rated it at 4 stars.

There will be a **rear view option** for the players. By this we mean that as long as player holds a given button his view will change to see what is behind him instead of in front of him.

**Physics will be used to simulate collisions** between objects. This can be between vehicles and the arena, vehicles amongst each other, vehicles versus enemies, enemies amongst each other, etcetera.

The **movement of the vehicles need to be controlled**. We will use forces to control the accelerating and breaking process, steering and jumping.

In the corner of the player’s screen there will be a **mini-map** that displays the arena, the position of all players and the location of their current objective depending on their mission.

## Time-Line

### Week 1

#### Food for thought

* Decide on a style/setting
* Brainstorm on mini-games
* Brainstorm on game title

#### Prototypes

* Player model
* Arena
* Transition between race and mini-game
* Player controller
* Textures
* Gamer accounts
* LAN multiplayer

### Week 2

#### Food for thought

* Brainstorm on mini-games
* Point system
* Game balancing (1 vs 3, 2 vs 2, free-for-all)

#### Prototypes

* Animations for player model
* Arena elements (ramps, traps, etc.)
* 1 mini-games (at least)
* Genetic algorithm
* High scores on web server
* Textures
* Path finding algorithm
* Arena props (vegetation, buildings, props in general)
* LAN multiplayer

### Week 3

#### Deliver

* Prototyping report
* Revised core project document
* Prototypes

#### Prototypes

* More mini-games
* More animated models (motor cycles?, trucks?, enemies, etc.)

### Week 4

#### Food for thought

* Combining game elements
* Game balancing

### Week 5

#### Deliver

* Peer reviews

### Week 6

#### Deliver

* Early access game

### Week 7

### Week 8

#### Deliver

* Beta game

### Week 9

#### Deliver

* Peer reviews
* Finished game

#### Prototypes

* Presentation